REMARKS

Claims 1-27 were examined.

The specification has been amended. No new matter is entered by way of these amendments.

The claims have been amended, some claims being cancelled.

The independent claims recite the invention embodiment in which at least two pumps are operated in turns.

The amendments of the claims are supported by the original specification and illustrated by Figures 3a-3b.

No new matter is entered by these amendments.

Claim Rejections - 35 USC § 112

Claims 1-27 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims have been amended to remedy the stated basis of rejection.

Withdrawal of the rejection is solicited.

Claim Rejections - 35 USC § 103

Claims 1, 3-13, and 15-27 were rejected under 35 U.S.C. 1 03(a) as being unpatentable over US Patent 6,481,973 to Struthers in view of US Patent 4,945,491 to Rishel.

Claims 2 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Struthers in view of Rishel as applied to claims 1 and 13, and further in view of US Patent 2,462,076 to Dryden.

The rejections are traversed.

Struthers discloses a method for operating a variable-speed pump driven by a motor capable of developing high torque at low speeds.

The method comprises attempting to run the pump at a selected speed. Struthers teaches to determine, by assessing the torque being generated by the motor, whether the pump is clogged. When the torque being developed by the motor exceeds a maximum for the selected speed, the speed of the pump is reduced and the maximum acceptable torque for the motor is thereby increased. The torque is then permitted to rise unless and until it exceeds a maximum for the newly selected speed.

The Examiner acknowledges (page 3 of the Office Action) that Struthers does not teach to select a first rotation speed at which the amount of transferred fluid relative to consumed energy is greatest.

Rishel discloses a method and apparatus by which the efficiency of a multi-pump pumping system may be accurately determined, and the individual pumps thereof selectively energized and de-energized to optimize the efficiency of the system.

In Figure 1 and in the text passages explaining Figure 1, Rishel describes a fixed speed pumping system in which individual pumps are energized and de-energized to optimize the efficiency of the pumping system.

Rishel teaches a method to determine efficiency of the pumping system in order to be able decide when to energize and when to de-energize one or more of the pumps. Rishel does not teach that the "fixed speed" of the fixed speed pumping system would be a speed at which the amount of transferred fluid relative to consumed energy is greatest.

In Figure 2 and in the text passages explaining Figure 2, Rishel describes a variable speed pumping system for which the following examples are given (see col. 10, lines 57-68, emphasis added):

"A system parameter transmitter 102 is coupled to sump 17 via transducer 103 which monitors the level of fluid in sump 17, whereby to cause the speed of pumps 20 and 30 to vary relative to the rate at which fluid flows into sump 17 from a source shown as a pipe 110. Alternatively, transmitter 102 and transducer 103 could be positioned downstream of outlet header 14

at delivery point 50, for example, to monitor pressure, flow, temperature, or level or the like thereat. Transmitter 102 provides a system parameter signal S which is utilized by a speed controller 100 to control the speed of variable speed pumps 20 and 30 as is well understood."

The underlined portions indicate that the pump speeds are varied on the basis of, e.g., flow rate, pressure, temperature, level or the like. This is quite contrary to the idea recited in the independent claims of the present application according to which a first value of pump rotation speed is selected, i.e., the value at which the amount of transferred fluid relative to consumed energy is greatest, and a pump is driven at this first value when a certain limit is exceeded/gone under.

Regarding the disclosure of Rishel and the independent claims of the present application, it should be noted that the following a) and b) are different tasks/steps:

a) determining the efficiency of a pump when the pump rotates at some speed that may be determined, e.g., by the frequency of a supply network,

b) selecting a pump rotating speed to a value at which the amount of transferred fluid relative to consumed energy is greatest.

The independent claims of the present application include a feature related to task b) whereas the teaching of Rishel relates to task a). For example, it is well possible to determine the efficiency of a pump (task a) when the speed is far from an optimal speed at which the amount of transferred fluid relative to consumed energy is greatest and without a slightest idea of the value of the optimal speed.

The Examiner refers to the equation at the top of column 7 of Rishel. Rishel, however, says (from the bottom of column 6, emphasis added) that:

"Computer 65 is further programmed as indicated by box 69 to <u>determine wire-to-water efficiency (W)</u> according to the formula [the formula referred to by the Examiner]:

$$W = (Q \times HS)/(K \times E),$$

wherein K is a predetermined conversion factor to cause W to be between 0 and 100%."

Hence, the above formula is related to the above-mentioned task a), i.e., determining the efficiency of a pump when the pump rotates at some speed. In the above formula, Q is flow rate (e.g. in gallons of water per minute), HS is head (e.g. in feet of water) and E power (e.g. in kilowatts). Therefore, the formula does not include speed and thus it does not provide e.g. a value of speed at which the amount of transferred fluid relative to consumed energy is greatest.

The Examiner states that Rishel teaches to select a pump operation condition with maximum efficiency.

Applicant respectfully points out that Rishel teaches to determine prevailing efficiency and, indeed, to the select the operation conditions but Rishel selects the operation conditions in a sense that it is selected whether or not an individual pump is energized or de-energized on the basis of determined efficiency. Rishel does not teach to select the operation conditions by selecting the speed so that the amount of transferred fluid relative to consumed energy is greatest.

Therefore, remembering that Struthers does not specifically teach to select a first rotation speed at which the amount of transferred fluid relative to consumed energy is greatest, Struthers and Rishel even in a combination do not teach all the limitations of the independent claims of the present application. Furthermore, the cited prior art does not disclose any hint or teaching that would lead a skilled person to make the modifications needed for arriving at the subject matter of the independent claims.

On the basis of the above analysis, the amended independent claims are clearly non-obvious over the cited prior art, and thus they are patentable. The dependent claims are patentable along with the respective independent ones.

Reconsideration and allowance of the claims are respectfully requested.

This response is believed to be fully responsive and to put the case in condition for allowance. Entry of the amendment, and an early and favorable action on the merits, are earnestly requested. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Should there be any matters that need to be resolved in the present application; the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

/Roland E. Long, Jr./

Roland E. Long, Jr., Reg. No. 41,949
209 Madison Street
Suite 500
Alexandria, VA 22314
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

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